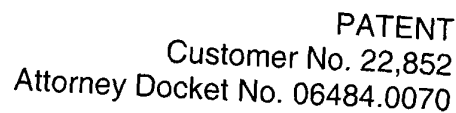


AF/2836



In re Application of:

Fu-Sheng Chen

Application No.: 09/802,924

Filed: March 12, 2001

For: ELECTROSTATIC CHUCK
SYSTEM AND METHOD FOR
MAINTAINING THE SAME

Group Art Unit: 2836

Examiner: Nguyen, D

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

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Sir:

RESPONSE TO FINAL OFFICE ACTION DATED SEPTEMBER 10, 2003

In reply to the Final Office Action dated September 10, 2003, Applicant submits the following remarks. This response is due by December 10, 2003, and is timely filed.

REMARKS

In the Final Office Action, the Examiner rejected claims 1, 3-6, 9, 17, 18, and 19 under 35 U.S.C. § 102(b) as being anticipated by Tepman (U. S. Patent No. 5,951,775);¹ and rejected claims 7 and 8 under 35 U.S.C. § 103(a) as being unpatentable over Tepman in view of Morita et al. (U. S. Patent No. 5,815,366).

¹ The Examiner mentioned in the Office Action that “the applicant’s arguments of claims 1 and 17 **do overcome** the Tepman reference.” Office Action, page 5, lines 9-10, emphasis added. This seems to be a typographical error, in view of the context of the “Response to Arguments” and the rejection of claims 1 and 17 based on Tepman. Clarification is respectfully requested.

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Applicant first respectfully traverses the rejections of claims 1, 3-6, 9, 17, 18, and 19 under 35 U.S.C. § 102(b).

In order to properly anticipate Applicants' claimed invention under 35 U.S.C. §102, each and every element of the claim in issue must be found, "either expressly or inherently described, in a single prior art reference." "The identical invention must be shown in as complete detail as is contained in the . . . claim. *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 1236, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989)." See M.P.E.P. § 2131, 8th ed., 2001.

The present application is in general related to an electrostatic chuck system. Particularly, claim 1 recites, among other things, "a lift structure . . . including a lift base, and at least one lift pin removably coupled with the lift base, the lift pin having two ends with a first end removably coupled to the lift base and a second end for supporting the semiconductor wafer during lifting operation of the lift structure, wherein the first end of the lift pin is threaded and the lift base has a threaded hole for receiving the first end of the lift pin."

Tepman discloses a removable deposition shield for processing chambers. The chambers include a support member 16, which "may be attached . . . to a conventional vertically movable elevator system 18," wherein "the substrate support 16 is mounted to the elevator 18 for vertical movement relative to an arrangement of pins 30-30 which themselves are moved vertically by a second vertical lift or elevator mechanism 32." See col. 2, line 65 - col. 3, line 6, and col. 4, lines 23-26.

In the final Office Action and the previous Office Action, the Examiner appears to consider the unnumbered part (pin holder) in Tepman's Fig. 2, to which pins 30 are

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attached, as corresponding to Applicant's claimed lift pin. However, as Applicant submitted in the Amendment and Remarks (the "Amendment") filed on July 21, 2003, the pin holder of Tepman does not include a threaded hole. Tepman discloses that each of lift pins 30 is coupled to the pin holder with two bolts, rather than with threads. Therefore, as Applicant argued in the Amendment, Tepman fails to teach at least "a lift base, and at least one lift pin . . . , wherein [a] first end of the lift pin is threaded and the lift base has a threaded hole for receiving the first end of the lift pin," as recited in claim 1. See Amendment, pages 6-7.

However, in the final Office Action, the Examiner insisted that Tepman teaches "the lift structure has an external thread on the first end of the lift pin and a matching internal thread in a hole provided by the lift base to [removably] couple the lift pin and the base." Office Action, page 2. Applicant respectfully disagrees with the Examiner.

Applicant submits that Tepman does not discuss whether the pin holder has a threaded hole at all in its disclosure. Referring to Tepman, "pins 30-30 . . . themselves are moved vertically by a second vertical lift or elevator mechanism 32." Tepman only briefly introduces the "vertical lift or elevator mechanism 32," and the unnumbered pin holder is not even mentioned in the disclosure whatsoever. Neither does Applicant see a threaded hole in the pin holder in Fig. 2 of Tepman.

Moreover, Fig. 2 of Tepman clearly shows that each of pin 30 is coupled to the pin holder with one nut on each side of the pin holder. Although not specifically taught in Tepman, one of ordinary skill in the art would recognize that, with the two nuts to fasten pin 30, it would be unnecessary, and indeed very inconvenient to have a threaded hole in the pin holder. Applicant also brings to the Examiner's attention how

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different holes were drawn differently in Figs. 1 and 2 of Tepman. For example, compare the holes in the pin holder with the holes in support ring 4 and the threaded mating holes 37-37. Applicant notes that, because the holes in support ring 4 and the threaded mating holes 37-37 match the corresponding bolts, the lines of the edges thereof as shown in Figs. 1 and 2 are lower-weighted, while the lines of the edges of the holes in the pin holder are heavier-weighted indicating that these holes do not match pins 30 with a matching thread.

If the Examiner still believes Tepman teaches a threaded hole in the pin holder and maintains the rejection, Applicant respectfully requests that he “provide documentary evidence” showing that Tepman intended the holes in the pin holder to be threaded. See M.P.E.P. § 2144.03. Absent such documentary evidence, Applicant respectfully requests that the Examiner withdraw the rejection of claim 1 under 35 U.S.C. § 102(b).

Applicant also submits that the rejection of claims 3-6, 9, and 19 under 35 U.S.C. § 102(b) should be withdrawn, unless the Examiner provides documentary evidence to support the rejection, in view of the dependency of these claims upon claim 1.

Additionally, claim 17 recites “[a] method of maintaining a lift structure of a chuck system that supports a semiconductor wafer, comprising: providing a removable first lift pin to a lift base in the lift structure; removing the first lift pin from the lift base with the lift structure being coupled to the chuck system; and mounting a second lift pin to the lift base with the lift structure being coupled to the chuck system.” In the Amendment, Applicant argued that Tepman does not teach “a method of maintaining a lift structure”

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whatsoever in its disclosure. See col. 4, lines 22-39. Therefore, claim 17 is patentable over Tepman under 35 U.S.C. § 102(b). See the Amendment, page 7.

However, in the Office Action, the Examiner alleged that Tepman discloses “a method of maintaining a lift structure of a chuck wafer,” referring to Fig. 2 of Tepman. Office Action, page 3. Applicant respectfully disagrees. Applicant note that Fig. 2 at most shows a structure of an apparatus, and does not teach a “method” of maintaining such an apparatus.

Furthermore, as one of ordinary skill may infer from Fig. 2 of Tepman, in order to replace one of pins 30, one has to remove the nut on the end of pin 30 before he can remove pin 30 from the pin holder, and ***the pin holder has to be removed*** from the apparatus for the removal of the nut. Therefore, even assuming, *arguendo*, that Tepman teaches a method of maintaining the apparatus, (which Applicant does not accept,) Tepman’s teaching is apparently contrary to “removing the first lift pin from the lift base with the lift structure being coupled to the chuck system,” as recited in claim 17.

Thus, Applicant submits that claim 17 is patentable over Tepman, because Tepman does not teach a method of “maintaining a lift structure” at all; and even assuming it does, its teaching is still contrary to the recited method in claim 17.

Claim 18, which depends from claim 17, is also patentable over Tepman at least because of its dependency from an allowable base claim.

Regarding the rejection of claims 7 and 8 under 35 U.S.C. § 103(a) as being unpatentable over Tepman in view of Morita et al., Applicant first submits that, as discussed above, Tepman fails to teach or suggest each and every element of claim 1. Particularly, Tepman fails to teach at least “wherein the first end of the lift pin is

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threaded and the lift base has a threaded hole for receiving the first end of the lift pin,” as recited in claim 1. Also as discussed above, Tepman actually teaches away from claim 1, because Tepman clearly shows that each of pin 30 is coupled to the pin holder with one nut on each side of the pin holder, and it would be unnecessary and inconvenient to have the hole in the pin holder threaded.

Morita et al. discloses an electrostatic chuck, wherein “[an] ejector pin housing 19 consists of a housing base 19b of stainless steel (JIS-SUS316), with bores 19c for seating the springs 20 being formed therein, and a housing top 19a made of polyimide. The ejector pins 16 are fixed to individual pin flanges 18, which are connected to the ejector pin housing 19 through the individual springs 20 seated in the bores 19c.” Col. 4, lines 50-56, and Fig. 2 of Morita et al. Applicant notes that Morita et al. does not teach or suggest at least “at least one pin removably coupled with the lift base”, and therefore does not teach or suggest at least “the lift pin having two ends with a first end removably coupled to the lift base . . . , wherein the first end of the lift pin is threaded and the lift base has a threaded hole for receiving the first end of the lift pin,” as recited in claim 1. Therefore, Morita et al. does not overcome the above-mentioned deficiencies of Tepman, and Tepman and Morita et al., taken alone or in combination, fail to teach each and every element of claim 1, and even teach away from claim 1.

Thus, claim 1 is allowable over Tepman in view of Morita et al. under 35 U.S.C. § 103(a), and claims 7 and 8, which depend from independent claim 1, are also allowable over Tepman in view of Morita et al. at least because of their dependency from an allowable base claim.

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In view of the foregoing, Applicant respectfully requests the reconsideration and reexamination of this application and the timely allowance of the pending claims 1, 3-9, and 17-19.


Please grant any extensions of time required to enter this response and charge any additional required fees to our deposit account 06-0916.

Respectfully submitted,

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Dated: December 17, 2003

By:


Richard V. Burgujian
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